

# Young Geun Kim

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🌐 <https://ygeunkim.github.io>

## Education

Mar. 2019 – Feb. 2025 (Expected)     **Ph.D.**, Sungkyunkwan University, Seoul.  
Advisor: *Changryong Baek*.

Mar. 2013 – Feb. 2019     **B.Ec. in Statistics**, Sungkyunkwan University, Seoul.

## Research Interests

**Long-range dependence**     Vector heterogeneous autoregressive (VHAR) model.  
**Bayesian econometrics**     Bayesian vector autoregressive (BVAR) models.  
**Anomaly detection**     Time series anomaly detection.

## Research Experience

Jun. 2019 – . . . .     **Research Assistant** Time series Lab, Sungkyunkwan University, Seoul.  
Researched Bayesian Vector Heterogeneous Autoregressive models.

May 2024 – . . . .     **Part-time RA** Data-driven AI Security HCI Lab, Sungkyunkwan University, Suwon.  
Researched physics-informed anomaly detection methods.

Apr. 2019 – Feb. 2020     **Part-time RA** Data-driven AI Security HCI Lab, Sungkyunkwan University, Suwon.  
Participated in the **anomaly detection in Cyber-physical systems** project. Developed anomaly detection algorithm.

## Teaching Assistanship

Aug. 2023     **Time Series Analysis and its Applications** The University of Samsung Electronics.  
TA to time series analysis course - included in data science track - for Samsung Electronics employees. Held PyTorch Lab for time series forecasting.

Nov. 2020 – Dec. 2020     **Data Analysis and Modeling 2** Statistics, SKK GSB AI MBA, Seoul.  
TA to Time series analysis course for KB bank employees.


Mar. 2020 – Jun. 2020     **Recent Advances in Applied Statistics (STA5037)** Statistics, Sungkyunkwan University, Seoul.  
**Introduction to Time Series Analysis (STA3001)** Statistics, Sungkyunkwan University, Seoul.  
**Insurance Statistics (STA3018)** Statistics, Sungkyunkwan University, Seoul.

Sep. 2019 – Dec. 2019     **Mathematics for Statistics (STA2008)** Statistics, Sungkyunkwan University, Seoul.



May 2019 – Jun. 2019     **Matrix algebra for Statistics (STA2017)** Statistics, Sungkyunkwan University, Seoul.

## Research Publications

## Journal Articles

- 1 **Y. G. Kim** and C. Baek, “Bayesian vector heterogeneous autoregressive modeling,” *Journal of Statistical Computation and Simulation*, vol. 94, no. 6, pp. 1139–1157, 2024.  DOI: 10.1080/00949655.2023.2281644.


## Conference Proceedings

- 1 J.-H. Yun, J. Kim, W.-S. Hwang, **Y. G. Kim**, S. S. Woo, and B.-G. Min, “Residual size is not enough for anomaly detection: Improving detection performance using residual similarity in multivariate time series,” in *Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing*, ser. SAC '22, Virtual Event: Association for Computing Machinery, 2022, pp. 87–96, ISBN: 9781450387132.  DOI: 10.1145/3477314.3506990.
- 2 **Y. G. Kim**, J.-H. Yun, S. Han, H. C. Kim, and S. S. Woo, “Revitalizing self-organizing map: Anomaly detection using forecasting error patterns,” in *ICT Systems Security and Privacy Protection*, A. Jøsang, L. Fitcher, and J. Hagen, Eds., Cham: Springer International Publishing, Jun. 2021, pp. 382–397, ISBN: 978-3-030-78120-0.  DOI: 10.1007/978-3-030-78120-0\_25.

## Workshops & Posters

- 1 J. Cho, S. Tariq, S. Lee, *et al.*, *Contextual anomaly detection by correlated probability distributions using kullback-leibler divergence*, 5th Workshop on Mining and Learning from Time Series, held in conjunction with KDD'19, Anchorage, Alaska, USA, Aug. 2019.

## Patents

- 1 S. S. Woo and **Y. G. Kim**, “Apparatus and method for detecting outliers in cyber-physical systems,” 1 026 080 180 000, Nov. 2023.  URL: <https://doi.org/10.8080/1020220003261>.

## Presentations

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- Revitalizing self-organizing map: Anomaly detection using forecasting error patterns
  - IFIP SEC 2021 (Virtual), June 2021
  - Session 11: Machine Learning for Security

## Skills

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Coding     R, Python,  $\LaTeX$ , ...

## Grants and Awards

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2019 – 2021	<b>Graduate Merit Scholarship</b> , Sungkyunkwan University.
2018	<b>Masters and Doctors Connected Track Scholarship</b> , Sungkyunkwan University.
2014 – Spring 2015	<b>Dean's List</b> , Sungkyunkwan University.
Spring 2015	<b>Jinggeomdari Scholarship Track C</b> , Sungkyunkwan University.
Fall 2013, 2017	<b>Academic Excellence Scholarship</b> , Sungkyunkwan University.